

**ABSTRACT**

A signal detector to detect data in an input signal. The signal detector includes a finite impulse response (FIR) filter to equalize the data to a first target length. A Viterbi-like detector is matched to a primary target and generates a most likely path corresponding to the data in the input signal. A linear post-processor determines at least one most likely error event in the most likely path and generates revised paths based on the at least one most likely error event. A media noise processor operates on the data with a secondary target that is different than the primary target. The media noise processor computes path metrics corresponding to each of the revised paths as a function of a non-linear noise model and selects one of the revised paths based on the path metrics.